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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/574,115	07/24/2006	Tsuyoshi Matsuda	O11.2-13210-US01	5670

490 7590 10/09/2008

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EXAMINER	
MARCHESCHI, MICHAEL A	

ART UNIT	PAPER NUMBER
1793	

MAIL DATE	DELIVERY MODE
10/09/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/574,115	MATSUDA ET AL.	
	Examiner	Art Unit	
	Michael A. Marcheschi	1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10 September 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2 and 5-18* is/are pending in the application.

4a) Of the above claim(s) *6-11* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) *1,2,5.12-18* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

In view of the numerous amendments to the specification, it is requested that a substitute specification be submitted.

Claims 1, 2, 5 and 12-18 are rejected under 35 U.S.C. 103(a) as obvious over Sahota et al. (418) (US equivalent to JP 2003514374) in view of Vogt et al. (766), Kurata et al. (597) and Hirano (376) alone or further in view of Tsuchiya et al. (872).

Sahota et al. teaches in the abstract, column 43, lines 38-45, column 7, line 19 and the claims, a polishing composition for polishing Cu/Ta substrate comprising colloidal silica (i.e. polishing composition defined as a colloidal suspension, thus the silica is colloidal silica), an anticorrosive, water and PVA (98% hydrolyzed). This reference fails to (1) teach the use of 2 distinct colloidal silicas, (2) teach the acid component, (3) teach the oxidizer component and (4) teach the specific benzotriazole derivatives of instant claims 14-17.

With respect to (1) above, although the primary reference does not literally teach the use of 2 distinct colloidal silicas meeting the claimed limitations, the concept of using 2 distinct colloidal silicas as the silica abrasive in the composition of the primary reference would have been obvious to the skilled artisan because the use of 2 distinct colloidal silicas that met the claimed requirements (see Vogt et al. in sections [0030]-[0035]) is known to be used in polishing compositions to improve the polishing properties of the polishing composition (see sections [0025]-[0026] of Vogt et al.). Since any improvement in polishing properties of a polishing

composition is clearly beneficial in the polishing art, one skilled in the art would have clearly been motivated to incorporate any improving feature (i.e. use of 2 distinct colloidal silicas as defined by Vogt et al.) in a known polishing composition (i.e. composition of the primary reference) which would result in improved properties of a polishing composition. Burden is shifted to applicants to establish clear proof as to why one skilled in the art would not or could not, under any circumstances, be motivated to use a bimodal colloidal silica abrasive, as defined by Vogt et al., as the abrasive in the composition according to the primary reference, especially in view of the beneficial results clearly defined by this reference for this modification. With respect to the amounts of instant claim 13, it is known that a polishing slurry contains 1-30% total abrasives and if the bimodal abrasive, as defined by Vogt et al., is clearly used, the content of each individual colloidal silica will fall within the claimed range, especially in view of the calculated ratio of the 2 silica abrasives defined in sections [0030]-[0031] coupled with the total abrasives content defined in section [0034] (i.e. 5-95% of the total abrasive content of 1-30% can be colloidal silica (a) defined in section [0030] and 5-95% of the total abrasive content of 1-30% can be colloidal silica (b) defined in section [0031]).

With respect to (2) above, it is obvious to add an acid (sulfuric acid, etc.) to the composition according Sahota et al. (418) (US equivalent to JP 2003514374) in view of Vogt et al. (766), as defined above, because polishes for polishing Cu/Ta layers are known to contain this acid, as a notoriously well known conventional polishing additive, as shown by Kurata et al. in section [0042] coupled with section [0029] (i.e. the function of this material will aid in the polishing properties of the composition). In view of this, the addition of any known conventional additive to the composition according to the primary reference is of routine

knowledge in the art absent clear evidence to the contrary. The motivation for using this additive is that it is a conventionally known additive to be used in composition for the same purpose and thus one skilled in the art would have found it obvious to include any conventionally known additive in the composition defined by the primary reference.

With respect to (3) above, the addition of an oxidizing agent (claim 2) to the slurry according to over Sahota et al. (418) (US equivalent to JP 2003514374) in view of Vogt et al. (766), as defined above, would have been obvious to the skilled artisan motivated by the fact that this component is a notoriously well known conventional additive to be added to polishes for polishing Cu/Ta layers, as shown by Kurata et al. in section [0022] coupled with section [0029] and that said material optimizes polishing properties as well as minimizing dishing, thinning and scratching from occurring (see section [0022] of Kurata et al.) In the alternative, the use of an oxidizer would have been obvious to the skilled artisan motivated by the fact that this component is a notoriously well known conventional additive to be added to polishes for polishing Cu/Ta layers and that said material optimizes polishing accuracy as well as adjusting the polishing rate to a proper value (see Tsuchiya et al. in sections 0030-0031). All these teachings define beneficial reasons for using oxidizers, thus the motivation is clearly the beneficial results obtained when employed in polishing compositions.

With respect to (4) above, the primary reference states that corrosion inhibitors can be used and this renders obvious benzotriazole derivatives, and thus renders obvious the specific ones defined by claims 14-17 because these are well known benzotriazole derivatives to be added to polishing compositions, as is apparent from sections [0045]-[0046] of Hirano.

Claims 16-17 are rejected under 35 U.S.C. 103(a) as obvious over Sahota et al. (418) (US equivalent to JP 2003514374) in view of Vogt et al. (766) and Kurata et al. (597), as applied to claim 1 above and further in view of Konno et al. (011).

With respect to claims 16-17, the primary reference states that corrosion inhibitors can be used and this renders obvious benzotriazole derivatives, and thus renders obvious the specific one defined by claims 16-17 because these are well known benzotriazole derivatives to be added to polishing compositions, as is apparent from section [0080] of Konno et al.

Claims 1, 2, 5 and 12-18 are rejected under 35 U.S.C. 103(a) as obvious over Kurata et al (597) in view of Sahota et al. (418) (US equivalent to JP 2003514374), Vogt et al. (766) and Hirano (376).

Kurata et al. teaches in sections [0029], [0034]-[0038] and [0042]-[0047] and claim 10, a polishing composition for Cu/Ta layers comprising an abrasive (colloidal silica), an acid (sulfuric acid), an oxidizer, a benzotriazole derivative, polyvinyl alcohol and water. This reference fails to (1) teach the use of 2 distinct colloidal silicas, (2) teach the polyvinyl alcohol saponification degree, and (3) teach the specific benzotriazole derivatives of instant claims 14-17.

With respect to (1) above, although the primary reference does not literally teach the use of 2 distinct colloidal silicas meeting the claimed limitations, the concept of using 2 distinct colloidal silicas as the silica abrasive in the composition of the primary reference would have been obvious to the skilled artisan because the use of 2 distinct colloidal silicas that met the claimed requirements (see Vogt et al. in sections [0030]-[0035]) is known to be used in polishing

compositions to improve the polishing properties of the polishing composition (see sections [0025]-[0026] of Vogt et al.). Since any improvement in polishing properties of a polishing composition is clearly beneficial in the polishing art, one skilled in the art would have clearly been motivated to incorporate any improving feature (i.e. use of 2 distinct colloidal silicas as defined by Vogt et al.) in a known polishing composition (i.e. composition of the primary reference) which would result in improved properties of a polishing composition. Burden is shifted to applicants to establish clear proof as to why one skilled in the art would not or could not, under any circumstances, be motivated to use a bimodal colloidal silica abrasive, as defined by Vogt et al., as the abrasive in the composition according to the primary reference, especially in view of the beneficial results clearly defined by this reference for this modification. With respect to the amounts of instant claim 13, it is known that a polishing slurry contains 1-30% total abrasives and if the bimodal abrasive, as defined by Vogt et al., is clearly used, the content of each individual colloidal silica will fall within the claimed range, especially in view of the calculated ratio of the 2 silica abrasives defined in sections [0030]-[0031] coupled with the total abrasives content defined in section [0034] (i.e. 5-95% of the total abrasive content of 1-30% can be colloidal silica (a) defined in section [0030] and 5-95% of the total abrasive content of 1-30% can be colloidal silica (b) defined in section [0031]).

With respect to (2) above, the primary reference uses PVA and this would clearly suggest to the skilled artisan that the lack of an saponification degree implies that any conventional saponification degree for the PVA can be used as long as it provides the necessary characteristics to the polihsing composition. In other words, it is the examiners position that absent a teaching of the saponification degree would clearly imply to the skilled artisan that the PVA used can

include any PVA having any saponification degree. Since Sahota et al. teaches that PVA with the claimed saponification degree is notoriously known to be used in compositions for polishing Cu/Ta layers, it use thereof as the PVA in the primary reference is well within the scope of the skilled artisan. The motivation for using this specific saponification degree for PVA is that it is a conventionally known saponification degree for PVA to be used in composition for the same purpose and thus one skilled in the art would have appreciated that the PVA defined by the primary reference can include any conventionally known PVA absent clear evidence of criticality.

With respect to (3) above, the primary reference states that benzotriazole derivatives can be used and this renders obvious the ones defined by claims 14-17 because these are well known benzotriazole derivatives to be added to polishing compositions, as is apparent from sections [0045]-[0046] of Hirano.

Claims 16-17 are rejected under 35 U.S.C. 103(a) as obvious over Kurata et al (597) in view of Sahota et al. (418) (US equivalent to JP 2003514374), Vogt et al. (766), as applied to claim 1 above and further in view of Konno et al. (011).

With respect to claims 16-17, the primary reference states that benzotriazole derivatives can be used and this renders obvious the ones defined by claims 16-17 because these are well known benzotriazole derivatives to be added to polishing compositions, as is apparent from section [0080] of Konno et al.

Applicant's arguments with respect to all the claims have been considered but are moot in view of the new ground(s) of rejection.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael A. Marcheschi whose telephone number is (571) 272-1374. The examiner can normally be reached on M-F (8:00-5:30) First Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jerry Lorengo can be reached on (571) 272-1233. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Michael A Marcheschi/

Primary Examiner, Art Unit 1793